CLAIMS

What is claimed is:

1. A signal processing method comprising the steps of:

receiving a signal having a level of distortion;

filtering the signal according to a filter parameter to reduce the level of distortion;

comparing the filtered signal to a reference;

generating a quantized signal, having at least two signal levels, based on the comparison;

detecting a signal parameter of each of the filtered signal and the quantized signal;

detecting an energy in each of the filtered signal and the quantized signal;

adjusting the filter parameter based on the signal parameter of the filtered signal, the signal parameter of the quantized signal, and at least one of the detected energies; and

responsive to the adjusting step, further reducing the level of distortion.

2. The method of Claim 1, wherein detecting the signal parameter comprises detecting a second energy in a frequency component of each of the filtered signal and the quantized signal.

3. The method of Claim 1, wherein:

the signal has a data rate; and

detecting the signal parameter comprises detecting a second energy in a component of each of the filtered signal and the quantized signal, the component having a frequency higher than one half of the data rate.

4. The method of Claim 1, wherein:

the signal has a data rate; and

detecting the energy comprises detecting the energy in a component in each of the filtered signal and the quantized signal, the component having a frequency less than the data rate.

5. The method of Claim 1, further comprising the steps of:

scaling the signal parameter of the filtered signal based on the energy in the quantized signal; and

scaling the signal parameter of the quantized signal based on the energy in the filtered signal.

6. The method of Claim 1, further comprising the steps of:

scaling the signal parameter of the filtered signal based on the energy in the quantized signal;

scaling the signal parameter of the quantized signal based on the energy in the filtered signal; and

comparing the scaled signal parameter of the filtered signal to the scaled signal parameter of the quantized signal, wherein

the adjusting step comprises adjusting the filter parameter based on the comparison.

7. A method for processing a communication signal having a data rate comprising the steps of:

applying a degree of equalization to the communication signal;

quantizing the equalized communication signal;

monitoring a parameter in each of the equalized communication signal and the quantized communication signal;

monitoring a low-frequency energy in at least one of the equalized communication signal and the quantized communication signal, the low-frequency energy having a frequency less than the data rate;

comparing the monitored parameter in the equalized communication signal to the monitored parameter in the quantized communication signal and compensating the comparison according to the monitored low-frequency energy in the at least one of the equalized communication signal and the quantized communication signal; and

adjusting the degree of equalization responsive to the comparing step.

8. The method of Claim 7, wherein:

monitoring the low-frequency energy comprises determining a difference between the monitored low-frequency energy in the equalized communication signal and the monitored low-frequency energy in the quantized communication signal; and

the comparing step comprises comparing the monitored parameter in the equalized communication signal to the monitored parameter in the quantized communication signal and compensating the comparison according to the difference in the low-frequency energy.

9. The method of Claim 7, wherein:

monitoring the low-frequency energy comprises:

monitoring the low-frequency energy in the equalized communication signal; and

monitoring the low-frequency energy in the quantized communication signal; and

the comparing step comprises:

scaling the monitored parameter in the equalized communication signal based on the monitored low-frequency energy in the quantized communication signal;

scaling the monitored parameter in the quantized communication signal based on the monitored low-frequency energy in the equalized communication signal; and

comparing the scaled parameter of the equalized communication signal to the scaled parameter of the quantized communication signal.

10. The method of Claim 7, further comprising the steps of:

transmitting the communication signal through a medium;

causing a distortion of the communication signal with the medium; and

receiving the distorted communication signal from the medium, wherein the applying step comprises applying the degree of equalization to the received communication signal to correct the distortion.

11. The method of Claim 7, wherein the parameter comprises edge energy.

12. The method of Claim 7, wherein monitoring the parameter comprises detecting a power in a frequency component in each of the equalized communication signal and the quantized communication signal.

13. The method of Claim 7, wherein monitoring the parameter comprises detecting a power in a high-frequency component in each of the equalized communication signal and the quantized communication signal, wherein the frequency of the high-frequency component is greater than one half of the data rate.

14. The method of Claim 7, wherein quantizing the equalized communication signal comprises processing the equalized communication signal with a comparator.

15. The method of Claim 7, wherein applying the degree of equalization to the communication signal comprises filtering the communication signal.

16. The method of Claim 7, wherein applying the degree of equalization to the communication signal comprises processing the communication signal with a Bode equalizer.

17. A signal processing circuit comprising:

a filter for filtering a communication signal;

a comparator coupled to an output of the filter for comparing the communication signal to a reference; and

a control circuit coupled to the filter and the output of the filter and an output of the comparator, the control circuit adjusting the filter based on a first frequency range of the communication signal sampled at the filter output and the comparator output and a second frequency range of the communication signal sampled at the filter output and the comparator output.

18. The circuit of Claim 17, wherein the filter is operative to compensate for a distortion in the communication signal.

19. The circuit of Claim 17, wherein the filter comprises an equalizing filter.

20. The circuit of Claim 17, wherein the control circuit comprises:

a high-pass filter, passing electric signals with frequencies above a first frequency threshold and attenuating electric signals with frequencies below the first frequency threshold; and

a low-pass filter, passing electric signals with frequencies below a second frequency threshold and attenuating electric signals with frequencies above the second frequency threshold.

21. The circuit of Claim 17, wherein the control circuit is further operative to adjust the filter in response to a difference between a first edge energy of the communication signal at the filter output and a second edge energy of the communication signal at the comparator output.

22. The circuit of Claim 17, wherein the filter comprises a Bode equalizer.

23. The circuit of Claim 17, wherein the control circuit is further operative to provide equalization to the communication signal by reducing a difference between an edge energy of the communication signal at the filter output and the edge energy of the communication signal at the comparator output.

24. The circuit of Claim 17, wherein the comparator is further operative to quantize the communication signal.